DOCUMENT RESUME

ED 413 816 HE 030 719

AUTHOR Saunders, Nancy G.; Malm, Loren D.; Malone, Bobby G.; Nay, Fred W.; Oliver, Brad E.; Thompson, Jay C., Jr.

TITLE Student Perspectives: Responses to Internet Opportunities in a Distance Learning Environment.

PUB DATE 1997-10-00

NOTE 25p.; Paper presented at the Annual Meeting of the Mid-Western Educational Research Association (Chicago, IL, October 15-18, 1997). For a related document, see HE 030 720.

PUB TYPE Reports - Evaluative (142) -- Speeches/Meeting Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.

DESCRIPTORS Administrator Education; Computer Uses in Education; Cooperative Learning; Course Evaluation; *Distance Education; Educational Methods; Elementary Education; Graduate Study; Higher Education; Interactive Television; Interpersonal Communication; Multimedia Instruction; Peer Relationship; Self Management; Stress Variables; *Student Attitudes; Student Participation; Teacher Role; Telecommunications; Telecourses; *World Wide Web

IDENTIFIERS *Ball State University IN

ABSTRACT

This study examined student attitudes toward interactions with class members on an Internet site supplementing a multimedia graduate-level distance learning course at Ball State University (Indiana). The course, "Elementary School Curriculum" was taught in a studio classroom (of 13 students) and transmitted to five distant sites (involving 24 students) in Indiana. Technology included two-way audio signals and one-way video signals for in-class interaction and an Internet World Wide Web site for out-of-class interaction. Qualitative evidence-collection techniques included focus group interviews, telephone interviews, and eight survey instruments. Analysis of students' reactions to the Internet site focused on coping strategies, stressors, and benefits. Students reported strategies involving management of personal resources, the computer environment, self, and others. Predominant themes in student reactions included three stressors and two benefits. Stressors reported included concerns associated with communication issues, with computer involvement, and with computer and Internet access. Benefits most frequently identified were the sense of empowerment and the satisfaction of having a shared space with fellow classmates. Implications drawn include the value of moderator leadership, the importance of a face-to-face encounter, the challenges of the on-line text-based medium, the influence of learning and temperament styles, and the development of computer-supported collaborative learning opportunities. (Contains 54 references.) (DB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

HE

ED 413 816

Student Perspectives: Responses to Internet Opportunities in a Distance Learning Environment

by

Nancy G. Saunders

Loren D. Malm

Bobby G. Malone

Fred W. Nay

Brad E. Oliver

Jay C. Thompson, Jr.

Ball State University
Muncie, Indiana

A Paper Presented at the Annual Meeting of the
Mid-Western Educational Research Association
October 15 - 18, 1997
Chicago, Illinois

IR 030 719

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

NANCY G. SAUNDERS

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

BEST COPY AVAILABLE

Introduction

The distance learning environment has long been a challenge and a concern for educators who base their practices upon the learning theories of Piaget, Rotter and Vygotsky. Tension between practice and theory results from the lack of interactivity characteristic of the distance learning setting. Interactivity describes the manner in which the learner dialogues with the self, with the course material, and with others during a learning activity (Baker-Albaugh, 1993). It is the interpersonal dialogue with others so critical for productive learning that is typically absent in the distance learning classroom. The benefits of this interactivity among learners include increases in learning effectiveness (Bates, 1993), higher levels of cognitive processing (Garrison, 1993), and development of collaborative and cooperative learning skills (Berge, 1995). Recognition of these student-related benefits resulting from interpersonal interaction has stimulated the development and application of interactive technologies in the field of distance learning.

Emerging computer technologies are capable of facilitating an interpersonal dimension within the distance learning environment. Currently, computers are a technological application widely used for distance course delivery (Wells, 1992). Computers are not commonly used as a means for providing interactive, interpersonal communication within distance learning courses carried by other media (Mason and Kaye, 1989). Harasim (1992) stated computers can potentially "contribute to a sense of community within the group, forging a social bond that can offer important motivational and cognitive benefits with the learning activities" (p. iii). To achieve these motivational and cognitive benefits, distance educators today must design, develop, and deliver interactive learning opportunities using computer technologies. The use of computer technologies, when combined with other complimenting media, can provide the distance learner with a balanced, productive, and interactive learning environment (Bates, 1995; Eastmond, 1995; Nipper, 1989) and facilitate flexible interpersonal communication among learners independent of time and space (Paulsen, 1992).

A recognized authority on distance education, Anthony Bates has stated: "Interaction between the learner and other learners ... is possibly the most important form of interaction for many learners, but it has tended to be neglected in distance education" (1990, p. 6). Recognition of this neglect has prompted distance educators to find new ways to provide for the social and intellectual needs of their students. In this study, student responses toward one such attempt to provide for the interactive, interpersonal needs of learners in a distance classroom were examined.

The purpose of this study was to describe student attitudes toward the social and intellectual interaction with class members on an Internet site designed to supplement a multimedia distance learning experience.

Methodology and Theoretical Framework

The purpose of qualitative descriptive research is to observe, describe, and explain events or phenomena. The purpose of this study was to describe a specific phenomenon within a specific situation. The phenomenon was the computer-mediated communication among students; the situation was the interactive computer environment of a distance learning setting. Because this research was qualitative, phenomenon-centered, and situation-specific it is a case study (Merriam, 1988). Therefore, the research design incorporates case study assumptions and methodology.

The goal of a qualitative case study is to understand the meaning of observed experiences. From a constructivist viewpoint, the qualitative researcher assumes the existence of multiple realities that result from personal interactions and perceptions. The researcher seeks to understand the subjective phenomenon of perceptions through an inductive process of building concepts, propositions and theories (Denzin & Lincoln, 1994). The purpose of this case study was inductively to understand and describe student attitudes toward the social and intellectual interaction with class members on an Internet site. In doing so, the researcher was the primary instrument, able to respond to the context, adapt techniques to the circumstances, and process, clarify, and summarize evidence as it was collected (Guba & Lincoln, 1981).

Within the constructivist perspective, this study was based upon a theoretical foundation of Piaget, Rotter, and Vygotsky. A fundamental assumption of Piaget's cognitive theory is that the learner is necessarily active (Crook, 1996). Building upon that concept, Julian Rotter (1954), in his *Social Learning Theory*, established the assumption that meaningful learning occurs in a social environment, through social interactions with other people. In 1978, cultural theorist Vygotsky proposed that all cognitive functions are first experienced in the public forum of social interaction. He stated: "All higher functions originate as actual relationships between human individuals" (Vygotsky, 1978, p. 57).

Upon this theoretical foundation, collaborative learning theories are based. The collaborative learning theories of Johnson and Johnson (1975) and Slavin (1989) provided the theoretical rationale for this study. Collaborative learning requires the dynamic participation of individuals working together to construct knowledge. Knowledge construction occurs through

social and intellectual interaction with peers and experts. Howard Gardner, et al. (1996) stated that, because of the distributed nature of intelligence, productive learning occurs only in conjunction with other humans and objects. "Most productive human work takes place when individuals are engaged in meaningful and relatively complex projects which ... involve interaction with other persons: mentors and teachers, ... peers and experts, ... teams of collaborators"(p. 224). The interactive Internet site included in this distance learning environment was developed to enable and support the active and collaborative engagement of learners in a meaningful and complex learning environment.

The setting for this study was a distance learning graduate level course offered by the Educational Leadership Department of Ball State University, Muncie, Indiana. The course, "Elementary School Curriculum," was offered Spring semester of 1997 and taught in a studio classroom in the Ball Communications Building. The course was transmitted via the Indiana Higher Education Telecommunications System to five distant sites in Indiana. Class participants included 13 in-studio students, 24 off-site students, two graduate assistants and a professor. The technology supporting the course included two-way audio signals and one-way video signals in-class instruction and interaction, and an Internet-based World Wide Web site for out-of-class interaction.

The World Wide Web site, created specifically for this course, was housed on the Ball State University server and was accessible through any Internet-linked personal computer. This "Class Page" offered the following services and interactive learning opportunities:

- an email Post Office, with photographs of, and links to, all class members, instructors, and technical support personnel;

- a Discussion Area, for out-of-class discussion among students on topics relating to course material and assignments;

- Project Reports and Motivational Ideas -- sections that required students to post course assignments for the mutual benefit of class members;

- Cool Class Web Sites -- a resource section for educators, linking the "Class Page" to hundreds of educational Web sites;

- BSU Resource Links -- a resource section for class participants linking the "Class Page" to Ball State University Web sites;

- a Notice Board, for posting weekly announcements of campus and class events, and reminders of class assignments and schedules;

- a Class Survey section, hosting a biweekly class participant survey;

- a Class Handouts section for delivering course materials and providing links to Web sites especially relevant to the week's topic;

- a Class Questions section, providing questions for out-of-class reflection and discussion regarding the course's topic for the week; and

- general class information sections: "Class Page" Introduction, Syllabus, Technical Tips, Professor Profile, Graduate Assistant Profiles, Visiting Scholar Profile, and Support Crew Member Profiles.

Because the "Class Page" was created to facilitate interaction among class members of "Elementary School Curriculum," participation on this Web site was required. Expectations for participation were clearly stated at the onset of the course.

In this descriptive study, a number of qualitative evidence collection techniques were employed. Focus group interviews were conducted with class members mid-semester. Telephone interviews were conducted with class members one week after the semester's end. Eight survey instruments were administered, and included the following: a pre-course short answer self-assessment of computer skills; six Likert scale and short answer surveys housed on the "Class Page;" and an overall course evaluation administered during the last class. This evidence was then analyzed and conclusions were drawn.

Findings

To help describe the population of this study, a survey - "Self-Assessment of Computer Skills" - was administered to students attending the first full class of the graduate level course, "Elementary School Curriculum." This self-assessment revealed students' attitudes toward, and frequency of, computer use that importantly impacted this study. For example, whereas 70 percent of the students in the course owned a computer and 92 percent had access to a computer at their workplace, only 30 percent reported feeling comfortable using a computer. Also, although 57 percent of the students had computers with Internet access, 70 percent reported having never, or only once, used the Internet. Three students, of the 37 enrolled, reported feeling comfortable using the Internet and only two students reported feeling competent to obtain Internet resources. Less than 30 percent of the students reported feeling somewhat skilled using a windows environment and, thankfully, 95 percent reported feeling at least somewhat skilled at word processing.

The evidence in this study was collected from interviews and surveys over a period of sixteen weeks. Students enrolled in "Elementary School Curriculum" were required to complete a computer-based survey during the second, fourth, sixth, eighth, tenth, and twelfth week of the course. Focus group interviews were conducted during week eight; telephone interviews were conducted during week sixteen. An end-of-semester course evaluation was completed by students during the last class session.

The evidence collected was categorized into cognitive and affective strategies used by students to manage the course requirement of participation in the Internet-based "Class Page." The cognitive strategies included management of personal resources, such as time, effort and money, and management of the computer environment, such as text-based communication and Internet information overload. The affective strategies included the management of self, such as self-confidence, self-direction and self-efficacy, and the management of others, such as interpersonal networking, and giving and receiving emotional support.

The cognitive strategy of personal resource management was evident as students chose how best to spend their limited resources of time, effort, and money to meet the course requirement of "Class Page" participation. The limitations of time were often mentioned by students in this course. The amount of time spent in locating an Internet-linked computer, accessing and exploring the "Class Page" environment, and fulfilling the "Class Page" course requirements was a constant concern for most class participants. One student admitted, "I'll be honest. If I had known how much time this computer stuff was going to take, I would have picked another class. I don't have time to be running around looking for a computer, then trying to figure all this stuff out." At week ten, 63 percent of the students reported continuing difficulties coping with lack of time and computer availability. Nevertheless, many students developed coping strategies for managing their time. One student shared, "I simply told myself - Tami, you have one hour to do everything you need to do on the "Class Page" before class tomorrow. Get with it." Another student remarked, "I don't see what the big deal is. So, you block out time and tell your family, 'I'm not here. I am in cyberspace.' You close the door and log on."

Learners' efforts also needed to be managed. By week fifteen, 76 percent of the students reported feeling the effort invested in the "Class Page" had enabled them to achieve the course's purpose, had stimulated critical thinking, and had encouraged them to apply course concepts beyond the classroom. One student stated, "You know, you get out of a class what you put into it.

When I saw the 'Class Page' requirement I told myself that this was a course I needed. I was really willing to put in the effort to learn about computers and the Internet."

Students reported a number of strategies for managing their effort. One student approached effort management by clarifying basic course requirements and the effort investment of classmates. She shared, "Well, my friends and I got onto the Discussion Area together after a few weeks of class to see if anyone else had posted stuff. We looked at the names and it was the same five names, so we thought - Okay, we're in the majority of people. So we didn't feel a big urge to get into the Discussion Area. We figured we had enough to do. I'll be honest, I'm not making the effort unless I have to." Another student was less successful: "I just get overwhelmed and stay on-line for hours hardly knowing where to turn next. I want to do my best, but I don't know how to do that. I mean, how much does he want? How much effort do I need to invest to get an A?"

A number of students chose to invest financial resources in computer equipment and Internet access to save time and effort. One student enthused, "I am so computer challenged! This course forced me to get with it. I mean, I went out and bought everything I needed - computer, modem, access - the whole shot. Now I am poor, but it was worth every penny. It has saved me hours of travel, of waiting, of fooling around on strange computers. My whole family has benefited!" By contrast, one student complained, "I resent having to buy Internet access for $25 a month when I'm already paying for this class. And just because I can't find a computer that isn't already busy with someone else playing on the Internet. So, now I have a connection, but it's going - as soon as the class is over!" By week ten, 25 percent of the students reported a continuing concern with computer costs.

The personal resources of time, effort and money were guarded, examined and spent by students to meet the requirements of this course. Management of these personal resources was one cognitive strategy reported by the students of "Elementary School Curriculum."

A second cognitive strategy, that of computer environment management, was evident as students were challenged to communicate in a text-only context and to handle the task of navigating the Internet. Student responses at week two illustrate the extent of this management challenge: 79 percent of the enrolled students said that Internet exploration would be a new experience for them, and 92 percent expected to learn new computer skills through "Class Page" participation.

The text-based nature of the "Class Page" offered some students the opportunity to improve writing skills. One student shared, "Internet communicating was easy! I put a couple of ideas out on the Discussion Area. You know, it is rather intimidating to put a thought out there on

the Internet for the whole world to see and to know that my sentences sound awful and I'm probably misspelling a bunch of words. But I decided - too bad! I was going to do it! I knew the embarrassment would force me to write better. Ha!" Another student said, "You know, I would read my writing after I sent it and it would always sound so stupid to me. But then, I would screw up my courage and try writing something again. This time I would work harder at my writing. I actually think I'm better at writing now."

Other students were more intimidated. One student confided, "I just can't write. I like to read what others write. But I can't do it myself. I mean -- what are the readers thinking? What is their expression when they read my idea?" Another student responded, "The 'Class Page' is okay for those people who like to stick their necks out, who talk in class and always have an opinion. They are just that way. But I'm not. I'm not going to write anything down that I'm not forced to." By week eight, while 66 percent of the students reported gaining computer competencies from "Class Page" participation, only 31 percent agreed that writing competencies had been gained. 51 percent of the students stated that the "Class Page" experience had not helped them learn to write important concepts.

The wealth of resources available on the Internet also required management. This management task was expedited by the Internet links provided in "Cool Class Web Sites." Seventy-seven percent of the students reported that a major advantage of the "Class Page" was its Internet resource links. As one student stated, "Without the Cool Class Web Sites I would have been lost. I spent many happy hours exploring links from the "Class Page" and beyond. It was so helpful to have a starting place. Of course I did have to manage to make my way around the net after leaving the "Class Page." But, little by little, I learned. It just took time." By week four, students were actively exploring the "Class Page," with 88 percent of the students completing the survey, and 70 percent posting assignments. By week fifteen, 90 percent of the students reported using Internet resources other than those on the "Class Page." One student shared, "I managed the infoglut by bookmarking cool sites, printing worthwhile articles to share with classmates, keeping my eye on the time, and keeping control of my curiosity. You know, without control, you can go crazy on the Internet and never leave it!" Another student stated, "At the beginning I was really serious about the whole thing and spent a lot of time on it. But lately I've only done things that are helpful to me. I've learned to manage the 'Class Page' and the Internet for my benefit and convenience."

By week ten, 44 percent of the students considered the "Class Page" a worthwhile supplement to "Elementary School Curriculum." By week fifteen, 95 percent stated that "Class Page" activities were relevant to the stated objectives of the course. As one student commented, "At first I was grousing around, complaining that I didn't have the time or energy to bother with computer stuff. Then my husband took me in hand. He said - 'Look, you're a teacher. So, what's more important to teach....The Spanish Civil War or computer skills? And how are you going to teach computer skills if you don't have them yourself?' So he bought a computer and hooked us up to the Internet. It hasn't been easy, but it has been fun! I mean, what a resource! And how to manage it? Wow, I'm still working on that!"

Students' cognitive strategies for coping with the course requirement of "Class Page" participation included management of both personal resources and the computer environment. Most students became successful managers; some did not. Computer comfort and competency influenced students' success in the "Class Page" context.

The affective strategy of self-management included controlling self-confidence, encouraging self-direction and recognizing self-efficacy. Students spoke much about their feelings related to the "Class Page." At week two of the course, 63 percent of the students reported feelings of anxiety concerning their computer competency. At the same time, 79 percent expected to enjoy using the "Class Page." Thus, at the onset of the course, students were tempering their feelings of inadequacy with positive expectations. As one student shared, "I knew I was in big trouble. What did I know about computers? Nothing. But I've been in pickles before and I'd seen my way out. I knew that, with hard work and a little luck, I could figure out what I was doing before anyone realized how little I knew!"

By week ten, 44 percent of the students were still concerned with their computer competency, 53 percent wanted classmate support, and 47 percent needed instructor encouragement. Nevertheless, only 13 percent of the students were now frustrated with the "Class Page," 55 percent felt secure while on the "Class Page," and 81 percent felt free to express their personal opinions on the "Class Page." Comments such as "I'm over my computerphobia!" and "The fear is gone!" and "My computer anxiety has eased a bit!" describe students who coped with a threatening environment by managing their self-confidence. One student shared, "I have never been on a computer. I have never been on the Internet. All my life I have been totally intimidated by it. Now I can actually click on something and get it! I told myself I could do it, and I did!"

Not all students were so successful managing their self-confidence. One student confided, "I have never been on the Internet before and I was really scared of going on it. So, I haven't. I just can't do it, so I get my friends to do my surveys and collect class questions and post things for me. I just can't." Another complained, "I'm really upset. If I had known that I would have to do computers I wouldn't have signed on. My friends said they would help me but they haven't. So what am I supposed to do?" Thus, self-confidence was both a condition and an approach that could be managed. Some students were more adept at developing and applying self-confidence than others.

Management of self-direction was another affective strategy used by many students. Self-direction was illustrated by students' willingness and ability to make choices that led to their successful course completion. For example, one student commented, "This is my life. This is my degree. If I take a course that requires that I stretch and learn new things, then I need to meet that head on. Whining about it is degrading. I can choose to learn. My fear does not need to dictate my actions." By week eight, 83 percent of the students had found the university's technical computer assistance an excellent resource. Seventy-seven percent rated the "Class Page" Notice Board and Class Questions as excellent for keeping them informed and for stimulating thought. Thus, students were choosing to become actively involved with the "Class Page" in order to meet both in-class and out-of-class participation requirements.

The affective strategy of self-management included managing self-efficacy - the sense of personal control over one's environment. As students moved from week one through week fifteen of "Elementary School Curriculum," a sense of increasing control was evident in student responses. Whereas at week two, 63 percent of the students reported feeling anxious about the "Class Page," by week ten 55 percent reported feeling secure and 71 percent reported successfully using the "Class Page" on a consistent basis. By week fifteen, 95 percent of the students felt the challenges presented in the course, including participation on the "Class Page," were appropriate to their level of development. As one student explained, "It's an issue of control, isn't it? When you feel like the master of your own work, you feel successful, empowered. At first the "Class Page" scared me. Now that I have struggled with it and mastered it, I feel terrific -- like I can take on the world!" This sense of control inspired one student to comment, "I have really liked this class. What a challenge. What an accomplishment. I'd recommend it to anyone!" By week twelve, 75 percent of the students stated they would recommend this class to friends and co-workers, 89

percent concluded they had enjoyed the class, and 64 percent felt secure in their use of the "Class Page."

Not every student developed a sense of self-efficacy. One student shared, "I can't cope. I know I'm supposed to be the boss. I mean, I can always pull the plug, turn the computer off. But it scares me. So I stay away. My friends do my surveys and post my ideas. I can't." Another student confessed, "When I sit at a computer I'm at its mercy." Thus, whereas some students assertively took control of the computer environment, others were controlled by it.

With each self-management strategy - self-confidence, self-direction, and self-efficacy - assertiveness and a sense of purpose produced more positive results. One student summed it up by saying, "I just take myself in hand. I tell myself - stop whining and start working. Self-defeating talk is a dead-end road."

A second affective strategy described by students for coping with the "Class Page" participation requirement was the management of others. This management approach included interpersonal networking and the giving and receiving of emotional support. The "Class Page" was specifically designed to support the interpersonal dimension of the distance learn , environment. Interestingly, the majority of students did not view the "Class Page" as a vehicle for developing relationships among fellow classmates. At week four, 53 percent of the students strongly disagreed with the statement that the "Class Page" was useful to get to know fellow classmates and 47 percent were undecided. By week six, only 21 percent of the students had participated in a discussion on the "Class Page." By week eight, 49 percent of the students strongly disagreed that, through the "Class Page," students had become acquainted with a fellow classmate, and by week twelve, 79 percent still had not participated in a "Class Page" group discussion. By the end of class, although 90 percent of the students felt free to express their ideas and opinions on the "Class Page," only a handful had done so in the discussion area.

Despite this low participation rate, the "Class Page" importantly contributed to the interpersonal networking among the class participants. Comments such as "Oh, I tackled that 'Class Page' problem with Janet. It's so much more fun with two!" and "My friends from our site ordered pizza and went to Laurie's house after class. We wanted to try to figure out the 'Class Page' assignment!" were common. Although interpersonal interactions on the "Class Page" were not highly valued, the relationships that developed as a result of the "Class Page" participation requirement were. As one student disclosed, "Well, I felt kind of guilty, but I went over to Dawn's to get help posting my project. When I got there, there was Jennifer and Kathy. They needed help,

too! So we had a computer party and got all our work done!" Another student explained, "The guys at my site didn't bother with the Discussion Area on the 'Class Page.' We just discussed among ourselves, and enjoyed that a lot. We did post our assignments, we shared information off the Web, and we spent a lot of time together in class and on our computers. In fact, I email them all the time."

The giving and receiving of emotional support among class participants was a second strategy in the management of others. This emotional support has been illustrated by many of the comments already quoted. Student responses were peppered with expressions of appreciation for the care and encouragement of fellow classmates. As one student exclaimed, " I don't know what I would have done without Jane! She was so encouraging!" Another shared, "I feel lucky to have been at a site with such nice people. They took the time to care about each other. When I was so afraid of the computer, they talked me through it. We grew very close."

Although at week eight interactions among class members on the "Class Page" were rated poor by 31 percent of class participants and good by only 29 percent, student comments illustrated that the "Class Page" provided the impetus for developing supportive interpersonal relationships among class members. The two affective strategies used by students to handle the "Class Page" environment - the management of self and the management of others - enabled interpersonal growth, which was, in turn, enabled by the "Class Page" environment. These affective strategies, in combination with the cognitive strategies described, enabled students to successfully complete the "Elementary School Curriculum" course requirements.

Reflections on the Findings

A number of cognitive and affective strategies were applied by graduate students enrolled in the distance learning course, "Elementary School Curriculum," to cope with the course requirement of participation on an Internet-based "Class Page." These strategies included management of personal resources, management of the computer environment, management of self, and management of others.

Imbedded in these strategies were a number of common themes. The predominant themes included three stressors and two benefits. The stressors most frequently alluded to were concerns associated with communication issues, with computer involvement, and with computer and Internet access. The benefits most frequently referred to were the sense of empowerment and the satisfaction of having a shared space, a common ground, with fellow classmates.

These five themes, both stressors and benefits, were referred to by students who had successfully managed the "Class Page" participation requirement, as well as those students who had opted out of "Class Page" interaction. Because of their centrality to the findings, the five themes provide a framework for the following discussion.

Discussion

Five themes that warrant further discussion and consideration include three stressors and two benefits. The stressors most frequently alluded to were the anxiety over communication issues, the stress associated with computer involvement, and stresses relating to computer and Internet access. The benefits most frequently referred to were the sense of empowerment and the satisfaction of having a shared space, a common ground, with fellow classmates.

The context for this study was a distance learning experience which included an Internet-based "Class Page" to increase the probability of student-student interaction. Because of this on-line component of the course, students were given the opportunity to interact whenever, wherever and with whomever they chose. The theoretical rationale for designing the on-line course component was based on the collaborative learning theories of Johnson and Johnson (1975) and Slavin (1989). These theories, and supporting research, contend that peer interaction within an educational setting is a critical variable for cognitive development. Peer interaction includes supporting one another in knowledge building, information sharing, social communication, and problem solving. To provide peer interaction within the distance learning setting, theorist Keegan (1986) stressed that distance educators must provide means for overcoming the limitations of the text-based environment, the difficulties of no heard or seen language, and the absence of immediate feedback. These challenges were associated with student-felt anxiety over computer-based communication issues.

The on-line environment can facilitate the sharing of ideas and reflections, the building of understandings, and a common, archived transcript of discussions. While many students thrive within the on-line environment, others shrink from it in fear. This writing apprehension (Velayo, 1994) or communication anxiety (Harasim, 1990) was evident in this study, as students remarked that the feeling of speaking to empty space when writing on-line prevented them from speaking at all. The opportunity to see the work of others and to compare their ideas to those of their classmates caused them great anxiety. The personal risk of sharing an idea with no guarantee of response was often beyond their coping capacity. Students overwhelmed by communication

anxiety chose non-participation. Students' effectiveness in the use of self-management strategies impacted their degree of communication anxiety.

Communication anxiety was not uncommon (Feenberg, 1989; Walther and Burgoon, 1992). The text-based nature of the medium placed a premium on skills of written expression and analysis, advantaging the highly motivated, often educationally privileged learner (Nipper, 1989). The benefits of the medium included a reduction of discriminatory communication patterns based on race, gender and physical features (Walther, 1992), a less authoritarian approach to learning and teaching (Nipper, 1989), and more available time for, and control over, communication (Harasim, 1989). Disadvantages of this text-dependent environment included a dependency upon a peer response in an asynchronous context (Feenberg, 1989) and the need to express oneself clearly and analytically only through written messages.

There are means to minimize the communication anxiety caused by using a text-based medium. A moderator can become involved in student interactions, shaping a positive, supportive social environment, and responding to each contribution with sensitivity (Harasim, Hiltz, Teles and Turoff, 1995). The course instructor can acknowledge each participant and recognize student growth (Berge, 1995). Use of humor, wise questioning, and group management (Davie, 1989) can be used to establish a non-threatening environment. The effort required to include all class participants is often rewarded by group cohesiveness and individual learner growth.

The "Class Page" Web site in this study was developed to overcome the social distance between students. Although technology cannot substitute for instructors, technical tools can be used to facilitate learning. How much learning takes place depends upon the willingness of the student to actively participate in the learning process. Successful learning in this context required that students take initiative for their own learning and growth by developing computer skills needed to interact on the course's Internet-based Web site. Because of stress related to computer use, some students in this study were unable or unwilling take this initiative.

The condition of being or feeling computerphobic (Rosen and Maguire, 1990), technostressed (Hedberg and McNamara, 1989), or technophobic (Kinzie, Delacourt and Powers, 1994) was described as a stressor by some study participants as inhibiting, and occasionally prohibiting, their "Class Page" activities. This stress was bound to students' effectiveness in managing self, others, and the computer environment.

Computerphobia has been described as making people feel "uncomfortable, self-conscious, and inefficient" (DeLoughry, 1993, p. A25) when they encounter computers. Through a meta-

analysis, Rosen and Maguire (1990) found that writers in empirical literature have predicted that "between one-fourth and one-half of all college students, business people, and school students may be 'computerphobic'" (p. 184). Recent researchers have found computer anxiety can be tempered by educational experiences with computers (Kinzie, et al., 1994) and such experiences contribute to student competence and confidence with computers (Delcourt and Kinzie, 1993). Marcoulides (1988) and Rosen, Sears and Weil (1987) have demonstrated computer experience as one of the best predictors of computer anxiety.

A number of educational approaches have been suggested for overcoming debilitating attitudes toward computer participation. Thorough training and continuing support in computer use (Velayo, 1994), emotionally supportive leadership within the computer environment (Kerr, 1986), and developing relationships through face-to-face meetings (Waggoner, 1992) are strategies suggested in the literature. In this study, all three of these strategies were used. The Assistant Director for University Computing Services, Ball State University, dialogued with class participants during weekly class sessions for the first six weeks of the course. He was available via email 24 hours a day and was perceived as competent and helpful. Supportive leadership within the computer environment was provided by the course professor and two graduate assistants. Two day-long face-to-face class sessions were included in the course schedule. In spite of these strategies, some students remained anxious and were unwilling to participate on the "Class Page."

Access issues created stress for many class participants in "Elementary School Curriculum." Over 30 percent of the students mentioned lack of computer or Internet accessibility as roadblocks to full participation on the "Class Page." Time limitations aggravated the issue of computer accessibility. Students reported having little time to search out an Internet-linked computer, to travel to the located computer, and to actively participate on the "Class Page." Both Burge (1994) and Kearsely, Lynch and Wiser (1995) reported similar results. McConnell (1990) found students felt they had wasted time and experienced unreasonable frustrations when seeking out and communicating through computers.

A number of researchers have reported that peripheral members of organizations have more access to work and social activities through the use of computer technologies (Harasim, 1990; Hartman, Neuwirth, Kiesler, Sproull, Cochran, Palmquist and Zubrow, 1995; Huff, Sproull, and Kiesler, 1989). In contrast, students in this study reported feeling like "outsiders" due to their lack of "Class Page" participation. They perceived that lack of accessibility pushed them to the

periphery of class activities. Rumble (1989) found that personal computers have become commonplace in our society. Even so, Olson (1988) cautioned that, if we are to develop the computer as a wide-ranging resource for learners, we must be cautious that their use does not amplify patterns of disadvantage. The value of mediating access difficulties by providing course content via a variety of media and by including opportunities for face-to-face interaction in the distance learning setting should not be overlooked (Eastmond, 1995; Nipper, 1989).

If learning is viewed as a social process, then provision of interactive communication technologies is critical for the productive distance learner. In the distance learning environment, the process of developing a community of scholars is dependent upon open access to the provided interactive technologies. The technology provided in this study was an interactive, Internet-based Web site available to all students through Internet-connected personal computers. This "Class Page" was available 24 hours a day, seven days a week. It provided access to peers and experts at any time and any place. Unfortunately, the convenience of the "Class Page" was irrelevant to a number of students. Due to restraints of work, family, and limited personal resources, some students found the lack of computer accessibility a major source of stress.

Empowerment was a theme which threaded through student experiences and attitudes in this study. The productive use of all four coping strategies reported in the findings resulted in feelings of empowerment and control. Collaborative learning theories emphasize student responsibility for learning. The on-line "Class Page" environment offered students opportunities for active thought and analysis, and required that students take the initiative for their own learning and growth.

In a study of learners' perceptions of computer conferencing, Burge (1994) concluded that students felt empowered in a computer climate that was emotionally supportive, intellectually challenging, information-rich, and interactive with peers and experts. Hiltz (1993) found that, within a computer context, students excelled who were in control of their effort and their learning environment. Harasinī (1989) observed that the asynchronous nature of the on-line environment facilitated self-directed learning and expanded learner control over the interactive environment, contributing to learner effectiveness (see also Mason and Kaye, 1990). Class participants reported feeling empowered by the increase of learner responsibility and control in the on-line environment of the "Class Page."

A sense of participating in a shared space in which learners contributed and received support, resources, and information was described as a "Class Page" benefit by many students.

Comments such as "We're on a level playing field" and "It's a common ground where we can meet as equals" and "All the resources are available to all of us" expressed the appreciation felt for the democratic nature of the "Class Page." Participating in this shared context where resources were equally available to all learners increased students' commitment to the "Class Page" and strengthened their social bonds to one another. This shared space provided a context for collective thinking, for resource access, and for social and intellectual exchanges.

This concept of shared space did not guarantee equal participation and interaction. It was found that only students who effectively employed the coping strategies of management of self, of others, and of the computer environment viewed the "Class Page" as shared space or common ground. Active participation on the "Class Page" developed a sense of membership in a community of scholars.

Both Hiltz (1993) and Harasim (1987) found participation rates in an on-line classroom increasing as students became more involved with each other and with the course material; Nipper (1989) and Eastmond (1995) did not. To encourage on-line participation and the development of a shared space, Eastmond (1995) recommended the provision of strong moderator leadership. Nipper (1989) cautioned that, in order to maintain a focus on educational issues, on-line participation within the shared space required daily instructor attention. The on-line "Class Page" environment in this study was intentionally designed to encourage participation and the perception of a shared space. Strong leadership was provided and the educational focus was maintained. Those students who found the "Class Page" a common meeting ground, where equal standing was credited to all, were successfully managing the on-line environment.

Five themes intertwined through the cognitive and affective strategies employed by students to cope with the Internet-based "Class Page" participation requirement of the "Elementary School Curriculum" course. Of these five themes, three were described as stressors: anxiety over communication issues, the stress associated with computer involvement, and stresses relating to computer and Internet access. Two themes were described as benefits: the sense of empowerment and the satisfaction of having a shared space for social and intellectual interaction. The distance learning context of this study included an Internet-based "Class Page," designed to increase the probability of interaction among students. The effectiveness of the coping strategies developed and employed by students within this learning context importantly impacted their overall satisfaction with, and success in, the "Class Page" environment.

Implications for Practice and Research

Highlighted briefly are five implications for practice and research: the value of moderator leadership, the importance of a face-to-face encounter, the challenges of the on-line text-based medium, the influence of learning and temperament styles, and the development of computer-supported collaborative learning opportunities. To meet the goal of student-student interaction in an on-line environment, the involvement of a discussion area moderator is recommended. The primary role of the moderator is to create and support a positive intellectual and emotional climate for the interactive learning environment.

Moderating computer discussions requires skill, sensitivity, and persistence. Feenberg (1989) recommended using weaving comments to summarize a discussion's main themes, giving credit to those contributing original thoughts. Davie (1989) drew attention to the use of leading and refocusing questions. Hiltz (1993) suggested that requiring student participation may be the only option for maintaining active dialogue. Moderating discussions involves the management of participant identity, the environment's social tone and attitude, and the development of student text-based communication skills. The challenge of moderating the social dynamics of on-line discussions was highlighted by Feenberg, who cautioned, "Failures and breakdowns occur at the social level far more often than at the strictly technical level" (1989, p. 28).

Although often awkward to provide, as well as to attend, the face-to-face encounter for distance learning classmates has been found to enhance the participant's overall learning experience (Fernback and Thompson, 1995; Rheingold, 1993). The face-to-face opportunity places the distance learning classroom in context, clarifies expectations, and initiates learning activities. During face-to-face discussions, class members can learn about network design, initiate relationships, and practice their technical skills. The instructor has the opportunity to develop personal contacts with class participants that are helpful later, when on-line reassurance and advice is required. Learners who have had face-to-face encounters are more likely to communicate effectively on-line because the personal meeting "has provided a number of contextualizing cues that would otherwise be absent from discussions held exclusively within the framework of a computer conference" (Mason and Kaye, 1989, p. 20).

The text-based nature of the on-line environment has been described as impersonal, limiting, and sterile (Feenberg, 1989), as well as reflective, explicit, and information-rich (Harasim, 1989). For educators to effectively improve an educational experience by including a text-based on-line environment, the computer context must be carefully designed.

One of the primary cognitive benefits of text-based interaction is the opportunity for reflective communication. The computer environment can support the "process of articulating thoughts into written speech [involving] deliberate analytical action" (Vygotsky, 1962, p. 99). It offers the student the option to reflect upon and edit one's on-line discussion response. Reflection influences attentiveness, not only to the content, but to the quality of the written message. The educational opportunities provided by this on-line characteristic should not be overlooked by distance educators.

The information-rich medium of the on-line environment is both a boon and a bane. The boon to students is the wealth of information available on the Internet. Although this information-rich source must be managed, its potential for providing learner resources is tremendous. The bane to students is that this rich resource is combined with archived transcripts of every discussion, conversation, and interaction held within the class context. If expectations are not carefully managed for the on-line classroom, this information-rich resource can fast become incomprehensible and overwhelming. Proactive resource management strategies are required to control the on-line distance learning environment.

The influence of learning styles and temperaments upon the distance learner's educational experience is fertile ground for further research. Most research done to date has focused on the psychological factors affecting learners in traditional settings. Few studies have been found that describe or test the affect of psychological factors upon the distance learner. Atman (1988), in a study of the relationship between psychological type and goal accomplishment among distance learners, suggested a theoretical advantage for distance learners classified as extroverts, intuitives, thinkers, and judgers by the Myers Briggs Type Indicator. Ehrman (1990) discussed major learning style models and speculated upon the applicability to distance education research. Distance education is an expanding educational context that offers a number of unique research opportunities. The relationship between learner characteristics and the distance learning environment is one such opportunity.

Development of computer-supported collaborative learning opportunities should continue as a research priority for distance learning providers. During the 1990s, progress toward providing accessible interpersonal interaction on-line has moved rapidly. Interactive on-line systems have been developed, tested and marketed. This trend must continue to receive institutional support in order to provide distance learners with interpersonal opportunities for growth and development. Harasim, et al. stated that on-line education "based on global interactivity, collaborative learning,

and lifelong access to educational activities and resources ... engenders new ways of working, studying, and problem-solving" (1995, p. 278). Access to such an education will enable learners to meet the challenges of the information age in the twenty-first century.

Conclusion

Distance educators are challenged to provide interactive opportunities for students within the distance learning context. Active, collaborative participation in the educational environment is a critical component of the learning process. In this study, social and intellectual interaction among distance learners was supported by an Internet-based "Class Page," which supplemented the course's audio and video delivery system.

Students developed affective and cognitive strategies for coping with this interactive on-line "Class Page" environment. These strategies included management of self and others, management of personal resources, and management of the computer environment. Three stressors and two benefits were identified by class participants as influencing their "Class Page" experience. The stressors were communication anxiety, computer anxiety and access issues. The benefits included a sense of empowerment and involvement in an on-line shared space.

Recommendations for improvement of practice included the suggestion that strong moderator leadership be provided for the interactive discussion area of the "Class Page." The value of an initial face-to-face encounter for distance classmates was discussed and the educational benefits of the text-based on-line environment were examined. Suggestions for future research included the need for studying the impact of student learning styles and temperaments in distance learning environments and the continuing need for innovative computer-supported collaborative learning opportunities.

Educators today are being challenged to appropriate and adapt emerging communication technologies to enrich our distance learning environments. By designing and implementing an interactive, interpersonal dimension for the distance learning environment, educators provide an equitable and potent educational opportunity for learners at a distance.

References

Atman, K. (1988). Psychological type elements and goal accomplishment style: Implications for distance education. The American Journal of Distance Education, 2(3), 36-44.

Baker-Albaugh, P. (1993). Definitions of interactive learning: What we see is not what we get. Journal of Instruction Delivery Systems, 7(3), 36-39.

Bates, A. (1990). Interactivity as a criterion for media selection in distance education. Paper presented at the Annual Conference of the Asian Association of Open Universities, Jakarta, Indonesia.

Bates, A. (1993). Theory and practice in the use of technology in distance education. In Keegan (Ed.), Theoretical principles of distance education. London: Routledge.

Bates, A. (1995). Technology, open learning and distance education. London: Routledge.

Berge, Z. (1995). Facilitating computer conferencing: Recommendations from the field. Educational Technology. (1), 22-30.

Burge, E. (1994). Learning in computer conferenced contexts: A learner's perspective. Journal of Distance Education, 9(1), 19-43.

Crook, C. (1996). Computers and the collaborative experience of learning. London: Routledge.

Davie, L. (1989). Facilitation techniques for the on-line tutor. In R. Mason & A. Kaye (Eds.), Mindweave: Communication, computers and distance education. Oxford: Pergamon.

Delcourt, M. & Kinzie, M. (1993). Computer technologies in teacher education: The measurement of attitudes and self-efficacy. Journal of Research & Development in Education, 27, 31-37.

DeLoughry, T. (1993 April 28). Two researchers say 'technophobia' may afflict millions of students. Chronicle of Higher Education, pp. A25-26.

Denzin, N. & Lincoln, Y. (1994). Handbook of qualitative research. Thousand Oaks, CA: Sage.

Eastmond, D. (1995). Alone but together: Adult distance study through computer conferencing. Cresskill, NJ: Hampton Press.

Ehrman, M. (1990). Psychological factors and distance education. The American Journal of Distance Education, 4(1), 10-24.

Feenberg, A. (1989). The written world: On the theory and practice of computer conferencing. In R. Mason & A. Kaye (Eds.), Mindweave: Communication, computers and distance education. Oxford: Pergamon.

Fernback, J. & Thompson, B. (1995). Computer-mediated communication and the American collectivity: The dimensions of community within cyberspace. In the Proceedings of the Annual Convention of the International Communication Association, Albuquerque, New Mexico, May.

Gardner, H., Kornhaber, M., & Wake, W. (1996). Intelligence: Multiple perspectives. Fort Worth: Harcourt Brace College Publishers.

Garrison, D. (1993). Quality and access in distance education: Theoretical considerations. In D. Keegan (Ed.), Theoretical principles of distance education. London: Routledge.

Guba, E. & Lincoln, Y. (1981). Effective evaluation. San Francisco: Jossey-Bass.

Harasim, L. (1987). Computer-mediated cooperation in education: Group learning networks. In Proceedings of the 2nd Guelph Symposium on Computer Conferencing, June 1-4 (pp 171-186). Guelph, Canada: University of Guelph.

Harasim, L. (1989). On-line education: A new domain. In R. Mason & A. Kaye (Eds.), Mindweave: Communication, computers and distance education. Oxford: Pergamon.

Harasim, L. (1990). Online education: An environment for collaboration and intellectual amplification. In L. Harasim (ed.), Online education: Perspectives on a new environment. London: Praeger.

Harasim, L. (1992). Forward. In M. Paulsen, From bulletin boards to electronic universities: Distance education, computer-mediated communication and online education. (ACSDE Research Monograph, No. 17) University Park, PA: Pennsylvania State University, The American Centre for the Study of Distance Education.

Harasim, L., Hiltz, S., Teles, L., & Turoff, M. (1995). Learning networks: A field guide to teaching and learning online. Cambridge, MA: MIT Press.

Hartman, K., Neuwirth, C., Kiesler, S., Sproull, L., Cochran, C., Palmquist, M., & Zubrow, D. (1995). Patterns of social interaction and learning to write: Some effects of network technologies. In M. Collins & Z. Berge (Eds.), Computer mediated communication and the online classroom. Cresskill, NJ: Hampton Press.

Hedberg, J. & McNamara, S. (1989). The human-technology interface: Designing for open and distance learning. Educational Technology, 26(2), 73-81.

Hiltz, S. R. (1993). The virtual classroom. Norwood, NJ: Ablex.

Huff, C., Sproull, L., & Kiesler, S (1989). Computer communication and organizational commitment: Tracing the relationship in a city government. Journal of Applied Social Psychology, 19, 1371-1391.

Johnson, D. & Johnson, R. (1975). Learning together and alone: Cooperative, competitive, and individualistic learning. Englewood Cliffs, NJ: Prentice-Hall.

Kearsley, G., Lynch, W., & Wizer, D. (1995). Online learning in graduate education. Educational Technology, 35(6), 37-42.

Keegan, D. (1986). The foundations of distance education. London: Croom Helm.

Kerr, E. (1986). Electronic leadership: A guide to moderating on-line conferences. In IEEE Transactions on Professorial Communication, PC-29(1), March.

Kinzie, M., Delcourt, M. & Powers, S. (1994). Computer technologies: Attitudes and self-efficacy across undergraduate disciplines. Research in Higher Education, 35(6), 745-767.

Marcoulides, G. (1988). The relationship between computer anxiety and computer achievement. Journal of Educational Computing Research, 4, 151-158.

Mason, R. & Kaye, A. (1989). Mindweave: Communication, computers and distance education. Oxford: Pergamon.

Mason, R. & Kaye, A. (1990). Toward a new paradigm for distance education. In L. Harasim (ed.), Online education: Perspectives on a new environment. London: Praeger

McConnell, D. (1990). Case study: The educational use of computer-conferencing. Educational & Training Technology International, 27(2), 190-208.

Merriam, S. (1988). Case study research in education. San Francisco: Jossey-Bass.

Nipper, S. (1989). Third generation distance learning and computer conferencing. In R. Mason & A. Kaye (Eds.), Mindweave: Communication, computers and distance education. Oxford: Pergamon.

Olson, C. (1988). Who computes? In D. Livingston (Ed.), Critical pedagogy and cultural power. South Hadley, MA: Bergin & Garvey.

Paulsen, M. (1992). From bulletin boards to electronic universities: Distance education, computer-mediated communication and online education. (ACSDE Research Monograph, No. 17) University Park, PA: Pennsylvania State University, The American Centre for the Study of Distance Education.

Rheingold, H. (1993). The virtual community: Homesteading on the electronic frontier. New York: Addison-Wesley.

Rosen, L. & Maguire, P. (1990). Myths and realities of computerphobia: A metaanalysis. Anxiety Research, 3(3), 175-191.

Rosen, L., Sears, D., & Weil, M. (1987). Computerphobia. Behavior Research Methods, Instruments, & Computers, 19, 167-179.

Rotter, J. (1954). Social learning and clinical psychology. Englewood Cliffs, NJ: Prentice-Hall.

Rumble, G. (1989). On-line costs: Interactivity at a price. In R. Mason & A. Kaye (Eds.), Mindweave: Communication, computers and distance education. London: Pergamon.

Slavin, R. (Ed.). (1989). School and classroom organization. Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.

Velayo, R. (1994). Supplementary classroom instruction via computer conferencing. Educational Technology, 34(5), 20-26.

Vygotsky, L. (1962). Thought and language. Cambridge, MA: MIT Press.

Vygotsky, L. (1978). Mind in society: The development of higher mental processes. Cambridge, MA: Harvard University Press.

Waggoner, M. (1992). Empowering networks: Computer conferencing in education. Englewood Cliffs, NJ: Educational Technology Publications.

Walther, J. (1992). Interpersonal effects in computer-mediated interaction. Human Communication Research, 19(1), 52-90.

Walther, J. & Burgoon, J. (1992). Relational communication in computer-mediated interaction. Human Communication Research, 19(2), 50-88.

Wells, R. (1992). Computer-mediated communication for distance education: An international review of design, teaching and institutional issues. University Park, PA: Pennsylvania State University, American Centre for the Study of Distance Education.